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By G. Lamprecht  
(Signature)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In the Application of: Joseph W. Triepels et al. )

Serial No.: 09/519,551 )

Filing Date: March 6, 2000 )

For: DISPLAY DEVICE )

Group Art Unit: 2674

Examiner: Abbas Abdulsalam

Dated at Briarcliff Manor, New York this 6<sup>th</sup> day of June 2005.

Commissioner for Patents  
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**APPELLANT(S) APPEAL BRIEF**

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**I. INTRODUCTION**

In accordance with the provisions of 35 U.S.C. § 134 and 37 C.F.R. §§ 1.191 and 1.192, this Appeal Brief is submitted in triplicate in support of the appeal from the Advisory Action dated May 12, 2005, finally rejecting claims 1-10.

**A. Real Party In Interest**

Appellant(s) have assigned their interests in the subject application to U.S. Philips Corporation.

**B. Related Appeals and Interferences**

Prior Appeal dated May 24, 2004 resulting in prosecution being reopened pursuant to Office Action dated August 12, 2004.

**II. STATUS OF THE CLAIMS**

**A. Status of Pending Claims**

Each Claim 1-10 has been finally rejected under 35 U.S.C. § 103, and each of these claims is on appeal.

**B. Status of Canceled Claims**

No canceled claims.

**III. STATUS OF THE AMENDMENTS**

There were no amendments filed subsequent to the final rejection of this application. Appellant(s) filed a Response to Office Action (Final Rejection) under 37 C.F.R. § 1.116 on April 12, 2005, offering arguments to overcome the rejection. An Advisory Action was then issued stating that Appellant(s) arguments contained in the response failed to place the application in condition for allowance.

**IV. SUMMARY OF THE INVENTION**

Appellant(s) claimed invention is directed to a display device with a conductor pattern on a first substrate connected to an electrically conducting pattern on a laminar substrate or foil at an area of through-connection. By providing one or more through-connections just along an edge of an actual display section (i.e., close to the pixels), the resistance of the conductor pattern (usually ITO tracks) hardly influences the total resistance. In one embodiment of the present invention, the foil allows direct external contact to be realized. In this embodiment the foil is

flexible so as to be bendable around and edge of the substrate. In another embodiment of the present invention, electrically conducting patterns on both sides of the foil form a cross-connection suitable for increasing the number of possibilities of designing a circuit to be realized on the foil. The invention may be applicable to display devices that are based on liquid crystal effects and/or other electro-optical effects, in which an electro-optical material is present between two substrates. For instance, in still another embodiment of the present invention, the display device can have a second substrate and an electro-optical material between the two (i.e., first and second) substrates, each provided with picture electrodes, for example, defining pixels together with the interpositioned electro-optical material. The display device may also be based on an electroluminescent effect.

At least one advantage of the present invention is found in the ability to provide a display device having a first substrate which is provided with a conductor pattern suitable for electrically connecting pixels in which, in a reliable manner, the surface of a first substrate has low-ohmic conductors which are connected to the exterior while simultaneously obtaining a maximum freedom of design.

## **V. ISSUE ON APPEAL**

Whether claims 1-8 are properly rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,868,582 to Jacobi et al. (the “582 patent”) in view of U.S. Patent No. 5,802,699 to Fjelstad et al. (the “699 patent”) and whether claims 9-10 were properly rejected under 35 U.S.C. § 103 as being unpatentable over the ‘582 patent in view of the ‘699 patent and in further view of U.S. Patent No. 6,563,554 to Okamoto et al. (the “554 patent”).

## **VI. GROUPING OF CLAIMS**

The claims on appeal before the Board of Patent Appeals and Interferences are claims 1-10. All of the claims 1-10 relate to a display device.

All of the claim(s) on appeal are set forth in the Appendix, and the independent claim 1 is set forth below:

1. A display device comprising a first substrate having a conductor pattern for electrically connecting pixels, and having a laminar substrate with opposed sides, which opposed sides are both provided with electrically conducting patterns that are electrically through-connected via at least one opening in the laminar substrate, wherein said at least one opening is proximate said pixels.

Pursuant to 37 C.F.R. § 1.192(c)(7), Appellant(s) hereby groups the pending claims for purposes of appeal as follows:

Claims 1-10 stand rejected under 35 U.S.C. § 103 over the '582 patent in view of the '699 patent, and relative to claims 9-10, in further view of the '554 patent.	The rejected claims stand or fall together.
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## VII. ARGUMENT

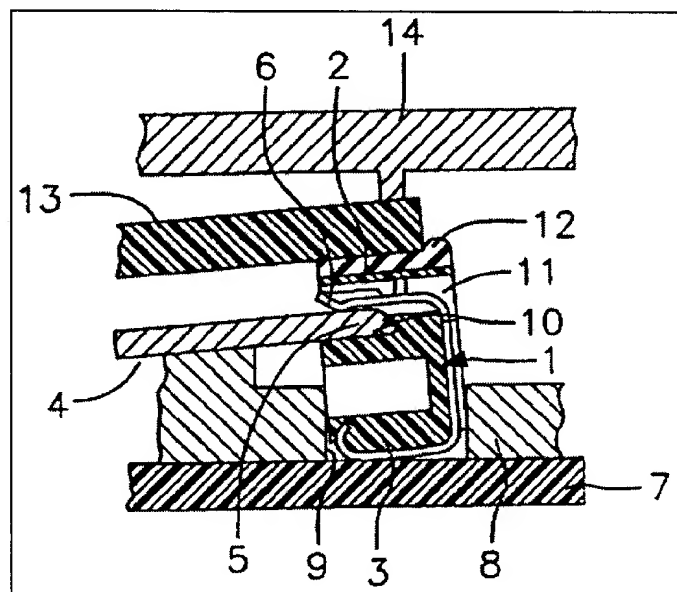
Claims 1-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the '582 patent in view of the '699 patent.

With respect to independent claim 1, from which claims 2 through 10 depend, the Examiner states that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jacobi's contact device shown in Fig. 1 to incorporate Fjelstad's a multi-laminar substrate (21) as shown in Fig. 1. Because a multi-laminar substrate helps make up a mounting assembly for mounting and connecting a substrate having electrically conductive leads as taught by Fjelstad". The Examiner also makes the general assertion that "it would have been obvious to one of skilled in the art that contact at the edges of the display panel exclude the pixels and hence meets the desired feature of 'proximate to the pixels'" (*See* Action, page 3). The Examiner's grounds for rejecting claim 1 are hereinafter traversed, and reconsideration is respectfully requested.

To establish a *prima facie* case of obviousness, the following criteria must be met: **(1)** There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the teachings of the references; **(2)** There must be a reasonable expectation of success found in the prior art, not the applicant's disclosure; and **(3)** The prior art references must teach or suggest all of the claim limitation(s). M.P.E.P. § 2142. "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." M.P.E.P. § 2141.02, citing *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983), *cert. denied*, 496 U.S. 851 (1984).

**A. There Is No Suggestion Or Motivation In The Prior Art To Modify The Contact Device As Shown In Fig. 1 Of The '582 patent To Incorporate The Multi-Laminar Substrate (21) As Shown in Fig. 1 Of The '699 patent.**

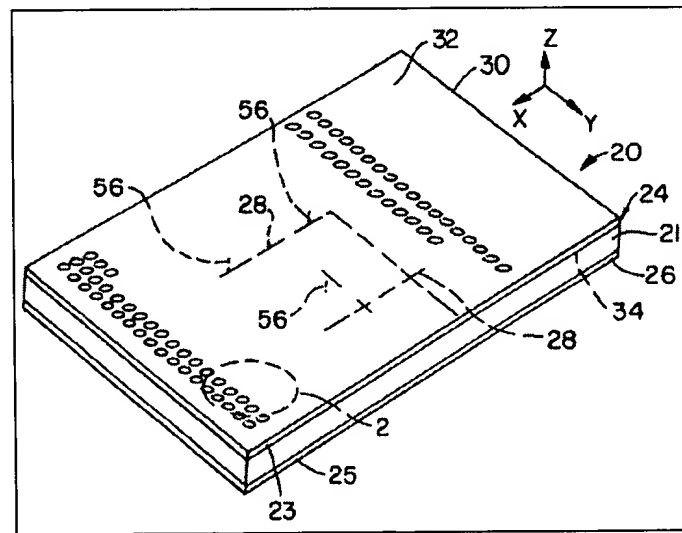
The '582 patent, with reference to reproduced Fig. 1 thereof below, is directed to a contact device having a connector module (1) of U-shaped cross-section. As shown, the connector module holds between its legs (2 and 3) an edge portion (5) of a liquid crystal display panel (4) that is occupied by a plurality of connector pads (not clearly shown). Corresponding to these connector pads, the upper, first leg (2) of the connector module (1) has on its inside a plurality of linearly arrayed contact elements (6) that contact the connector pads of the LCD panel 4 when such panel is engaged by the connector module (1). These contact elements (6), according to the '582 patent, extend to the outside of the second leg (3) of the connector module (1) so as to make contact with contact traces (not clearly shown) on a printed circuit board (7). The first, upper leg (2), according to the teachings of the '582 patent, also has openings (11) through which the linearly arrayed contact elements (6) extend into the area of the contact pads on the LCD panel. Further, on the outside of the upper leg (2), the connector module (1) is lined with a layer of soft elastomeric material (12) that supports a clear acrylic plate (13), so that the edge portion of the plate (13), through the elastomer layer (12), is clamped tight between the upper leg (2) and a housing cover (14).



'582 PATENT - FIG. 1

According to Jacobi et al., the contact device of the '582 patent is distinguished in essence by the fact that *(i)* the contact elements that extend over the outside of the second leg are in direct contact with the contact traces on the printed circuit board, and *(ii)* the connector module has the layer of soft elastomeric material on the outside of the leg that carries the linear array of contact elements on its inside so as to compensate for tolerances of shape and position when the LCD panel is at a slant relative to the PC board. (See, col. 1, lns. 57-67 and col. 2, lns. 1-22).

Referring now to Fig. 1 of the '699 patent reproduced below, in contrast to that which is suggested/disclosed via the '582 patent, the '699 patent, in pertinent part, discloses a generally planar (as opposed to U-shaped) mounting assembly (20) including a multi-layered laminated circuit panel (21) having numerous electrical leads (i.e., horizontal leads (28) and vertical leads (56)). As shown, this substrate (21) is defined by a top surface (23) having a connector (24) thereon and bottom surface (25) having a connector (26) likewise disposed thereon. (See, col. 9, lns. 54-67).



'699 PATENT - FIG. 1

According to Fjelstad et al., their disclosed planar or sheet socket components (i.e., connectors (24 and 26) for mounting microelectronic elements such as a semiconductor chip or other element to the substrate (21)) desirably has a planar or sheet like dielectric body with first and second surfaces, as well as a plurality of holes open to the first surface. These holes, as

disclosed, are arranged so as to correspond to an array of bump leads associated with a device to be mounted. The socket component further includes an array of resilient contacts secured to the first surface thereof in registration with the holes so that each such contact extends over one hole and is adapted to resiliently engage a bump lead when inserted into the associated hole. The socket component also includes terminals typically disposed on the second surface thereof so as to be electrically connected to the contacts on the first surface.

Thus, according to Fjelstad et al., a chip or other microelectronic component with the appropriate bump leads can be connected or mounted to the planar substrate (21) via the holes/contacts associated with the first surface of the socket component and electrically connected to the electrical circuit (i.e., leads 28 and 56) of the planar substrate (21) via the terminals associated with the second surface of the socket component. This connecting/mounting arrangement, according to Fjelstad et al., can advantageously be used either as a temporary interconnection for testing purposes or as a permanent connection between the microelectronic element and the planar substrate (21). (*See*, col. 4, lns. 10-32, 57-59).

In view of the foregoing, it seems apparent that the '699 patent, which reference reads on a mounting assembly intended to address issues relating to the level or flat mounting of microelectronic components to a planar substrate via flat or sheet-like connecting elements (i.e., connectors 24 and 26), does not address the issues associated with directly connecting an LCD panel to a PC board via one end of the LCD panel so that any slant or angle of the LCD panel relative to PC board is effectively compensated for. The reverse is also true. That is, the U-shaped connecting module disclosed via the '582 patent, which module, as emphasized by Jacobi et al., is well suited to compensate for tolerances of shape and position when an LCD panel is at a slant relative to a PC board, does not address problems/issues associated with the level or flat mounting of chip components to a planar substrate via sheet-like socket connectors as specified via the '699 patent.

Accordingly, it is respectfully submitted that, notwithstanding the Examiner's assertions, there is no suggestion or motivation in either reference to modify the contact device as shown via Fig. 1 of the '582 patent to incorporate the planar mounting assembly as shown via Fig. 1 of the '699 patent. Why would one of ordinary skill in the art want to adopt and/or incorporate the planar substrate (21) of the '699 patent (i.e., a substrate specifically configured for uniformly lateral or horizontal component mounting) into the connecting arrangement of the '582 patent (i.e., an arrangement specifically configured to address issues surrounding a component being

directly connected to a PC board via only an end thereof) or vice-versa? There is no reasonable basis for concluding that one of ordinary skill in the art would think to make such a combination. Accordingly, the prior art references, contrary to that which is suggested by the Examiner, do not teach or suggest modifying the '582 patent in view of the '699 patent and thus it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness for at least this reason.

**B. There Would Not Be A Reasonable Expectation Of Success In Modifying The Contact Device As Shown In Fig. 1 Of The '582 patent To Incorporate The Multi-Laminar Substrate (21) As Shown in Fig. 1 Of The '699 patent.**

Each prior art reference must be considered in its entirety, including those portions that would lead away from the claimed invention. M.P.E.P. § 2141.02. Both the '582 patent and the '699 patent – when considered in their entireties as they must be – effectively teach away from the proposed combination. Clearly then, there would not be a reasonable expectation of success in modifying Jacobi et al.'s contact device with its U-shaped connector module to incorporate Fjelstad et al.'s flat or planar substrate/component mounting assembly.

As noted above with respect to the '582 patent, Jacobi et al.'s proposed contact device requires, *inter alia*: (i) a connector module with a U-shaped cross-section that is well suited to accommodate at least an edge portion of a LCD panel, and (ii) a layer of soft elastomeric material on the outside of an upper leg of the connector module so as to compensate for tolerances of shape and position when the LCD panel is slanted relative to a PC board to which it is directly connected via the connector module. Distinctly, the proposed mounting assembly of the '699 patent, as previously noted, requires, *inter alia*: (i) a connecting or mounting arrangement in which a uniformly planar substrate is provided with two sheet-like connectors, one on each surface thereof, and (ii) that these sheet-like connectors each have a first surface defined by a plurality of holes/contacts suitable for receiving/engaging complementary bump leads associated with a mountable microelectronic component, and a second surface defined by a number of terminals electrically connected to the contacts of the first surface as well as with a circuit or network of leads associated with the planar substrate.

To modify Jacobi et al.'s contact device, which device utilizes a U-shaped connecting module to directly connect an LCD panel to a PC board and to accommodate or address any angle/slant between such LCD panel and PC board, to incorporate and/or utilize the substrate



(21), as suggested by the Examiner, with its sheet socket connectors disposed on either surface thereof, which connectors necessarily have a planar cross-section to: **(i)** effectively interface with the substrate surface and/or the circuit (i.e., lead network) thereof, and **(ii)** allow for the effective engagement of the hole/contact array with a corresponding bump lead array associated with a chip/component to be mounted to the substrate, would clearly be inconsistent with the teachings of Jacobi et al. and would significantly diminish, if not entirely defeat, a significant object of Jacobi et al.'s invention (i.e., a connector module suitable to compensate for tolerances of shape and position when the LCD panel is at a slant relative to the PC board). That is, the substrate/connector/component mounting arrangement disclosed via the '699 patent is not only clearly distinct from the board/connector/panel connecting arrangement disclosed via the '582 patent, but it is also plainly operatively inconsistent therefrom. Accordingly, it is respectfully submitted that when taken in their entirety, the cited references teach away from the modification suggested by the Examiner. Thus, it is further respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness at least for this reason.

**C. The Prior Art References Do Not Teach Or Suggest All Of The Elements Of Claim 1.**

Even if it were proper to modify Jacobi et al.'s contact device in the manner suggested by the Examiner in view of the '699 patent, which modification Appellants respectfully dispute, the resulting combination would not meet the terms of the present claimed invention. That is, the Jacobi reference not only fails to disclose or suggest the use of a laminar substrate with opposite sides having electrically conducting patterns, as suggested by the Action (*See*, Office Action, part 2, p.2), but further fails to disclose or suggest that such conducting patterns be through connected via at least one opening in the laminar substrate, *which opening is proximate pixels*. Furthermore, the '699 patent, which reference was cited to purportedly overcome the acknowledged shortcoming associated with the '582 patent, merely suggest a substrate having a horizontal/vertical lead arrangement associated therewith for facilitating a through electrical connection between the two sheet socket connectors associated with the opposing surfaces of the substrate (21) and therefore provides nothing with respect to locating one or more through connection openings of a substrate proximate pixels.

It follows then that there is no teaching, suggestion or disclosure anywhere in the

references of record to provide “a laminar substrate with opposed sides, which opposed sides are both provided with electrically conducting patterns that are electrically through-connected via at least one opening in the laminar substrate, wherein said at least one opening is proximate said pixels”, as recited in present claim 1. It is by positioning the electrical through-connection opening close/proximate to the pixels that the resistance of the conductor pattern has a minimal impact on total resistance.

In addressing the noted shortcomings associated with the art of record, the Examiner generally asserts that locating at least one electrical through connection opening in a substrate proximate pixels would have been obvious to one skilled in the art based on contact (purportedly via the U-shaped connector module of the ‘582 patent) at the edge of a display panel (purportedly the LCD panel of the ‘582 patent) (*See*, Office Action, part 2, p.3).

In response, Appellants respectfully note: *(i)* that the U-shaped connector module is clearly not an opening in a substrate, but rather is an external member directly connecting an LCD panel with a PC board; *(ii)* that notwithstanding the ‘582 patent disclosing a U-shaped connector module located at an edge of the LCD panel, such reference provides no disclosure as to any portion of the connector module being proximate pixels, and further *(iii)* that notwithstanding the ‘582 patent disclosing an LCD panel, such reference provides no disclosure as to pixel location relative to the edge of the LCD panel and/or the U-shaped connector module. Accordingly, as the Examiner has failed to demonstrate or indicate where the requisite disclosure, teaching or suggestion appears in the art of record (*See*, e.g., *In re Albert M.A. Rijckaert et al.* (28 USPQ 2d 1955) (Fed. Cir. 1993)), and as the such art fails to disclose or suggest each and every element of Applicants claimed invention, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness.

#### **D. Claims 9-10 And The ‘554 Patent.**

Appellants respectfully submit that claims 9 and 10, which depend directly from claim 1, are patentable over the cited combination or references (i.e., the ‘582 patent in view of the ‘699 patent and in further view of the ‘554 patent) at least for the reason identified/discussed above with respect to claim 1. That is, the ‘544 reference, which was cited in the Examiner for purportedly disclosing a “liquid crystal layer (1) sandwiched by the two substrates such that the one of the optical design of the liquid crystal layer (1) includes the one that can attain electro-

optical characteristics. See col. 3, 19-25", (See, Office Action, part 3, p. 4), fails to overcome the notable shortcomings discussed above with respect to the '582/'699 patent combination.

Accordingly, as none of the individual cited references, nor the combination thereof, suggest/disclose all of the required elements of claims 9 and 10, it is respectfully submitted, based at least on the reasons discussed above with respect to claim 1, that the Examiner has not established a *prima facie* case of obviousness with respect to claims 9 and 10.

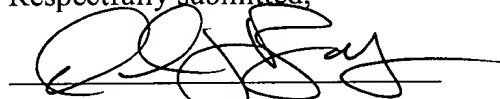
### VIII. CONCLUSION

In sum, at least for the foregoing reasons, reversal of the Final Rejection of Claims 1-10 is warranted and such action is earnestly solicited.

Authorization is hereby given to charge our Deposit Account No. 14-1270 in the amount of \$ 500 for payment of the fee under 37 C.F.R. §1.17(c). No additional fee is believed to be required in connection with this filing. However, if an additional fee is required, or otherwise if necessary to cover any deficiency in fees already paid, authorization is hereby given to charge our deposit account no. 14-1270.

May 31, 2005

Respectfully submitted,



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**VIII. APPENDIX**

1. (previously presented) A display device comprising a first substrate having a conductor pattern for electrically connecting pixels, and having a laminar substrate with opposed sides, which opposed sides are both provided with electrically conducting patterns that are electrically through-connected via at least one opening in the laminar substrate, wherein said at least one opening is proximate said pixels.

2. (previously presented) The display device of claim 1, wherein said electrically conducting patterns are metal patterns.

3. (previously presented) The display device of claim 2, wherein said metal patterns are formed from metals chosen from a group of gold, silver and nickel.

4. (previously presented) The display device of claim 1, wherein said conductor pattern on said first substrate is connected to an electrically conducting pattern on said laminar substrate at an area of a through-connection.

5. (previously presented) The display device of claim 4, wherein the part of said laminar substrate provided with said through-connections is secured to said first substrate.

6. (previously presented) The display device of claim 1, wherein said laminar substrate is flexible.

7. (previously presented) The display device of claim 4, wherein at least one of said electrically conducting patterns contacts a conductor pattern on a further support.

8. (previously presented) The display device of claim 1, wherein electrically conducting patterns realized on both sides of said laminar substrate form a cross-section.

9. (previously presented) The display device of claim 1, wherein said display device

has a second substrate and an electro-optical material between said first and second substrates, each provided with picture electrodes defining pixels together with said interpositioned electro-optical material.

10. (previously presented) The display device of claim 1, wherein said display device comprises an electroluminescent material.

**File History:**

*Application Filed:* March 6, 2000

*1<sup>st</sup> Office Action:* December 20, 2001 (rejected claims 1-10 under 35 USC 103)

*1<sup>st</sup> Amendment:* March 20, 2002 (remarks only, no amendments)

*2<sup>nd</sup> Office Action:* June 05, 2002

*2<sup>nd</sup> Amendment:* September 05, 2002 (remarks only, no amendments)

*Final Office Action:* November 19, 2002

*Response to Final:* December 20, 2002 (amended claim 1)

*Advisory Action:* January 24, 2003

*Continued Prosecution Application (CPA) Filed:* February 13, 2003

*1<sup>st</sup> CPA Office Action:* August 13, 2003 (rejected claims 1-10 on new grounds under 35 USC 103)

*1<sup>st</sup> CPA Amendment:* October 28, 2003 (claims 1-10 amended)

*CPA Final Office Action:* January 13, 2004

*Response to CPA Final:* February 19, 2004 (remarks only, no amendments)

*Advisory Action:* March 24, 2004

*Notice of Appeal:* April 12, 2004

*Prosecution Reopened/1<sup>st</sup> Office Action:* August 12, 2004

*Response to 1<sup>st</sup> Office Action:* November 10, 2004

*Final Office Action:* March 23, 2005

*Response to Final:* April 12, 2005

*Advisory Action:* May 12, 2005